



# ILC Kicker Pulser Tests

LLNL Inductive Adder

8/12/05

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### Inductive Adder Technology

This technology is extendable, adaptable and has room for development.

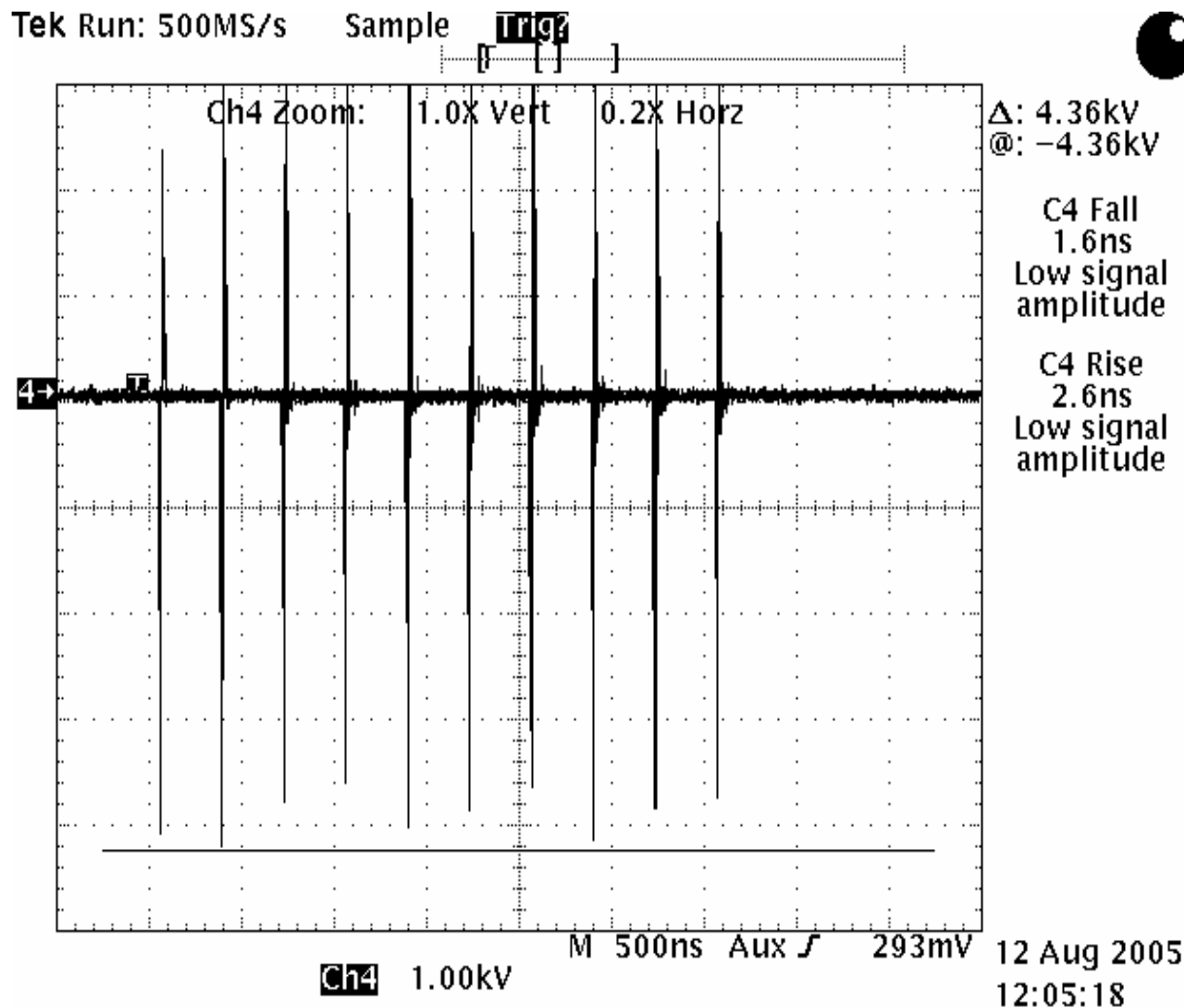
← This pulser is 15:1 at 1KV primary. It produces +/- 7.5KV differential into 50 Ohms.

KEK / ATF tests done May 19, 2005. (see talk by Naito)

Lab tests at LLNL done since then:

# 10 Pulse Burst @ 3MHz

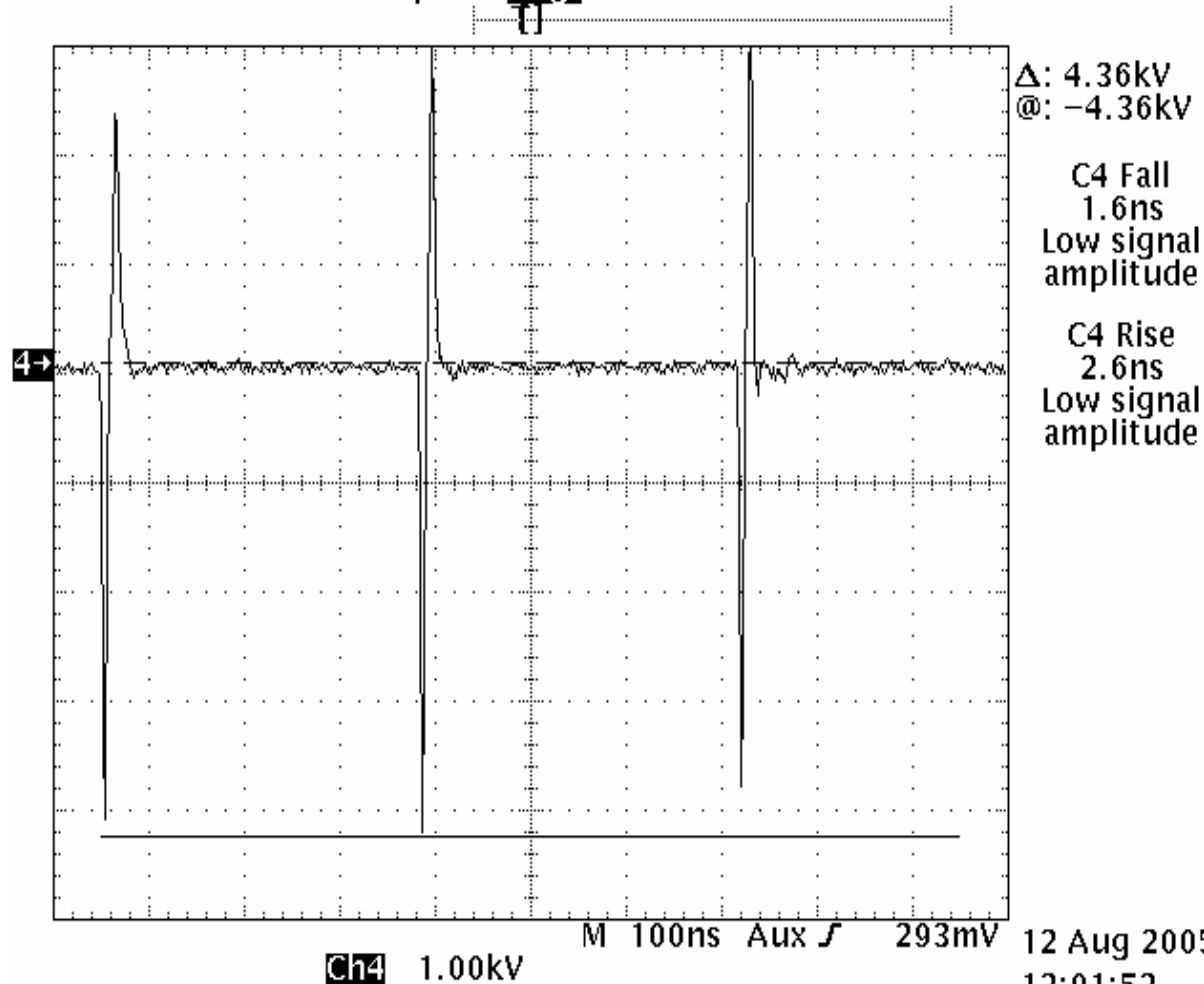
One side  
of the  
secondary  
stub-  
shorted



# 1st 3 Pulses of 10 Pulse Burst

Tek Run: 500MS/s

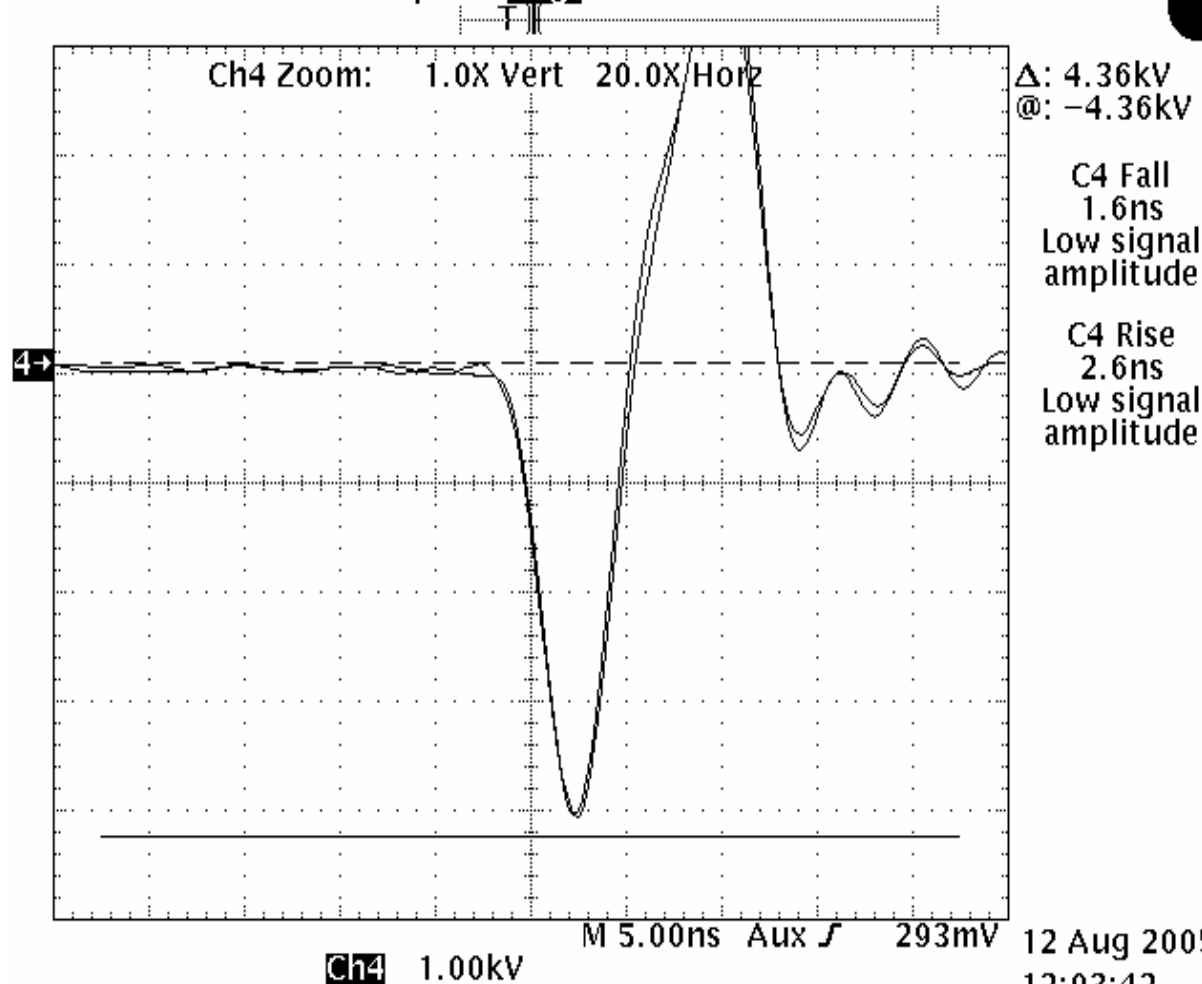
Sample **1000**



# 5th Pulse of 10 Pulse Burst

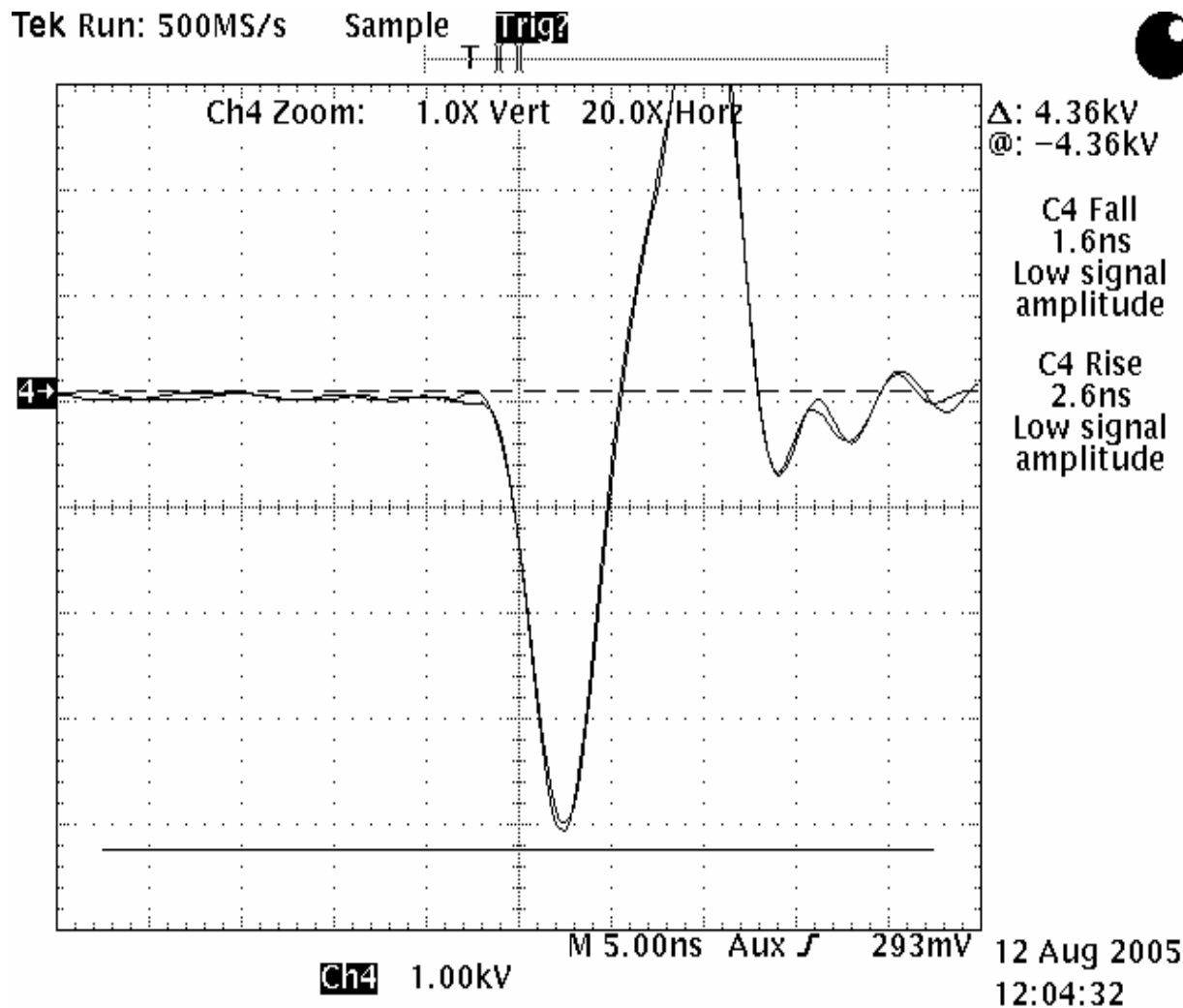
Tek Run: 500MS/s

Sample **1000**

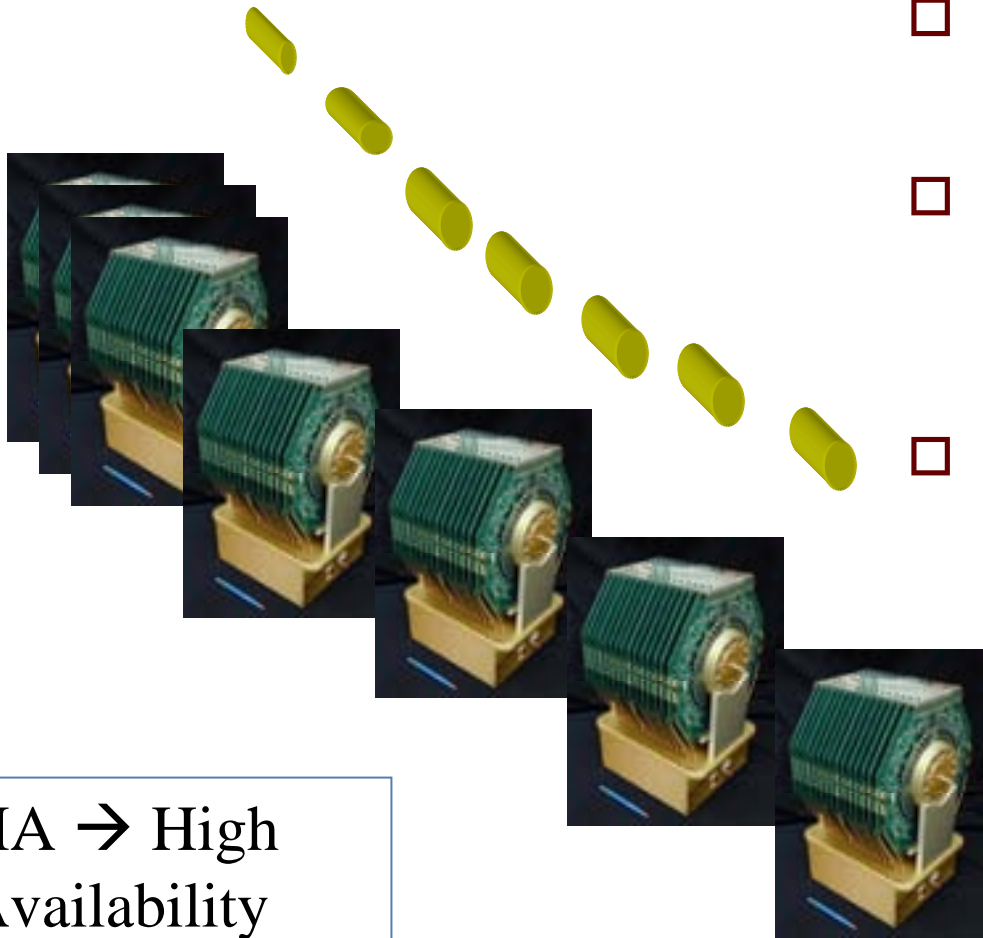


12 Aug 2005  
12:03:42

# Overlay of 5th & 10th Pulses of 10 Pulse Burst



# 'HA' Concept DR Kicker Systems



HA → High  
Availability

- Approx 50 unit drivers
- $n/N$  Redundancy System level (extra kickers)
- $n/N$  Redundancy Unit level (extra cards)

Diagnostics on each card, networked, local wireless

# Motivation for HA Design

- ❑ ILC is 10X scale, more complex than largest existing linacs
- ❑ Inoperative ILC prohibitively costly
- ❑ Current Availability for typical subsystems is inadequate for efficient ILC
- ❑ All electronics systems can achieve  $A \rightarrow 1$  if designed for HA
  - Instrumentation, Controls, DC Power Systems, Klystron Modulators, DR Kickers, Protection, etc.
- ❑ Reasonable to aim for *overall* 99% for all combined electronics systems



# HA - Summary

- ❑ All electronic systems for accelerator can be made HA at nominal additional cost
- ❑ Modular repetitive designs lead to better quantity manufacturing economics e.g. Modulator
- ❑ Development of prototypes with industry needed
- ❑ Telecom industry has promising solution to Control System needs (Advanced Telecom Computer Architecture (ATCA), a new standard)
- ❑ Plans:
  - Continue exploring all areas both power electronics, I&C
  - Promote collaborations to develop prototypes (e.g. Pohang)
  - Promote new instrument standards for accelerators & detectors
- ❑ Window of opportunity will be lost without early development support of HA design all areas discussed, and beyond electronics systems alone.